Claims

1. A method for performing random access in a mobile
communication network having a base transceiver station and
a plurality of mobile stations, comprising the steps of:
a) transmitting a parameter defining allowed access slots
used between said base transceiver station and a mobile
station to said mobile station;
b) determining said allowed access slots at said mobile
station based on said parameter; and
c) using at least one of said determined allowed access
slots for performing a random access operation to said base
transceiver station.

2. A method according to claim 1, wherein said parameter
is transmitted via a broadcast channel.

3. A method according to claim 2, wherein said broadcast
channel is the BCH channel of a WCDMA system.

4. A method according to claim 2 or 3, wherein said
random access is performed via the PRACH uplink channel and
the AICH downlink channel of the WCDMA system.

5. A method according to anyone of the preceding claims,
wherein said parameter defines a subset of available access
slots of said mobile communication network.

6. A method according to claim 5, wherein said subset is
determined by another parameter transmitted from said base
transceiver station to said mobile station.

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7.   A method according to claim 6, wherein said other parameter is a timing parameter defining a transmission timing of an uplink access slot.

8.   A method according to claim 6 or 7, wherein said other parameter is transmitted via a broadcast channel.

9.   A method according to anyone of claims 6 to 8, wherein the bit number of said parameter is changed in dependence on said other parameter.

10.   A method according to any of the preceding claims, wherein a transmission of a preamble signature or an acquisition indication is disabled in dependence of the value of said parameter.

11.   A method according to anyone of the preceding claims, wherein an index of an allowed uplink access slot is calculated on the basis of the value of said parameter and a frame number of a frame used for transmitting an uplink access slot.

12.   A method according to claim 11, wherein said index is calculated by using the equation

$$i = 3 \cdot N + (F \text{ modulo } 3)$$
$$\text{where } 0 \leq N \leq 2,$$

wherein F and N are integer numbers, and F denotes said frame number, and wherein only access slots having indices within the range 0 to 7 are valid.

13.   A method according to claim 11, wherein said index is calculated by using the equation

$$i = 4 \cdot N + (\Gamma \text{ modulo } 4)$$
$$\text{where } 0 \le N \le 3,$$

5   wherein Γ and N are integer numbers, and Γ denotes a frame number indicating two consecutive ones of said frame numbers of said frame used for transmitting an uplink access slot, and wherein only access slots having indices within the range 0 to 14 are valid.

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14. A method according to claim 12 or 13, wherein said parameter determines an offset to be added to said calculated index.

15   15. A method according to anyone of claims 1 to 11, wherein an index of an allowed uplink access slot is determined on the basis of the value of said parameter irrespective of a frame number of a frame used for transmitting an uplink access slot.

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16. A method according to anyone of the preceding claims, wherein an allowed downlink slot is determined by adding a predetermined value to an index of a received uplink slot.

25   17. A method according to claim 16, wherein said predetermined value is selected in accordance with a timing parameter defining a transmission timing of said uplink slot.

30   18. A method according to any of the preceding claims, wherein bit values of a binary expression of said parameter determines a combination of calculated indices obtained for other values of said parameter, said other values

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corresponding to the binary weights of said binary
expression.

19.   A system for performing random access in a mobile
5   communication network, comprising:
a) a network element **(10)** arranged for transmitting a
parameter defining allowed access slots; and
b) a plurality of mobile stations **(20)** arranged for
receiving said transmitted parameter, for determining said
10   allowed access slots based on said received parameter, and
for using at least one of said determined allowed access
slots for performing a random access operation to said base
transceiver station **(10)**.

15   20.   A system according to claim 19, wherein said network
element is a WCDMA base transceiver station **(10)** and said
mobile station **(20)** is a WCDMA mobile station.

21.   A network element for a mobile communication network
20   comprising a plurality of mobile stations **(20)**, comprising:
a) setting means **(14)** for setting a parameter defining
allowed access slots for performing a random access
operation; and
b) transmitting means **(11)** for transmitting said parameter
25   to said plurality of mobile stations **(20)**.

22.   A network element according to claim 21, wherein said
network element is a WCDMA base transceiver station **(10)**.

30   23.   A network element according to claim 21 or 22, wherein
said transmitting means **(11)** is arranged to transmit said
parameter via a broadcast channel.

24. A network element according to anyone of claims 21 to
23, wherein said setting means **(14)** is arranged to set said
parameter in dependence on a timing parameter value
defining a transmission timing of an uplink access slot in
5   said random access operation.

25. A mobile station for a mobile communication network
having at least one network element **(10)** allowing a random
access operation, comprising:
10   a) receiving means **(21)** for receiving a parameter defining
allowed access slots for said random access operation from
said network element **(10)**;
b) determining means **(23)** for determining said allowed
access slots based on said received parameter; and
15   c) transmitting means **(21)** for transmitting a random access
message to said network element **(10)** using at least one of
said determined allowed access slots.

26. A mobile station according to claim 25, wherein said
20   receiving means **(21)** is arranged to receive said parameter
via a broadcast channel.

27. A mobile station according to claim 26, wherein said
determining means **(23)** is arranged to determine said
25   allowed access slots on the basis of said received
parameter and a timing parameter received via said
broadcast channel.

28. A mobile station according to anyone of claims 25 to
30   27, wherein said determining means **(23)** is arranged to
calculate an index of an allowed uplink access slot on the
basis of the value of said received parameter and a frame

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number of a frame used for transmitting an uplink access
slot.

29.   A mobile station according to anyone of claims 25 to
27, wherein said determining means **(23)** is arranged to
determine an index of an allowed uplink access slot on the
basis of the value of said parameter irrespective of a
frame number of a frame used for transmitting an uplink
access slot.

30.   A mobile station according to anyone of claims 25 to
29, wherein a selection means **(24)** is provided for randomly
selecting from allowed access slots determined by said
determining means **(23)** an uplink access slot to be used for
transmitting a preamble of said random access message.

31.   A mobile station according to claim 30, wherein
consecutive preambles are transmitted a predetermined
number of access slots apart.

32.   A mobile station according to claim 31, wherein said
predetermined number depends on a timing parameter received
by said receiving means **(21)**.

33. A mobile station according to claim 30, wherein said
selection means **(24)** is arranged to perform said random
selection any time a preamble needs to be transmitted.